

TAB 16

COAL BURNER REGISTER, NOZZLES AND LIGHTERS INSPECTION

OBSERVATIONS AND WORK ACCOMPLISHED

The following items were identified by IPSC Engineering and a B&W Consultant on all coal burners and related equipment.

B&W Personnel changed out four coal nozzle assemblies that had been damaged by overheating from coal pipe fires. Several other coal pipe nozzle diffusers were replaced due to cracked supports or missing inner diffuser cones. B&W believes the coal pipe fires are attributable to coal "falling out" in the coal pipes. Although IPSC's minimum air flow velocity is well above B&W's recommendations, coal could still be falling out during special case situations such as when a mill trips under loaded conditions. The coal left in the coal pipes isn't removed during inerting and remains in the coal pipes until the mill is restarted. Another item that could be compounding the problem is higher than anticipated burner metal temperatures for out of service burners. These and other items are currently being addressed. Further information will be forwarded as more details become available.

Further overheating damage to burners was once again observed and documented during this outage. Cracked welds on the burner register front plates as well as severe overheating of carbon steel components were observed. IPSC Engineering had 30 new thermocouples installed in strategic locations on several burner register assemblies. The additional thermocouples may help IPSC convince B&W to add stainless steel to several additional areas on the burners. This would not only help eliminate the overheating problems, but could also help reduce cooling air requirements to out of service burners.

BURNER ASSEMBLY RECOMMENDATIONS

During each outage, the inner parts of the burner assembly should be thoroughly inspected for excessive wear areas and also check for any missing parts. The addition of new thermocouples should be closely monitored and observations reported to IPSC Engineering. Attached is a B&W report detailing observations made during the outage and recommended corrective work to be performed at the next available time.

Babcock & Wilcox

a McDermott company

To	C. A. PALMBERG - PM PROJECT MANAGEMENT - BVCB3K	
From	W. E. NEWKIRK - COMBUSTION SYSTEMS - BVN01C	
Cust.	INTERMOUNTAIN POWER	File No. or Ref. RB-614
Subj.	BURNER INSPECTION	Date MAY 22, 1987

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This letter to cover one customer and one subject only.

The writer visited Intermountain Power RB-614 to inspect the burners and report on condition of the burners. This visit was contracted by IPP to Denver Service and covered my time and expenses in full.

For the record it is noted that all failed welds, warped register plates, rope packing, reinforcing band on register, bent door shafts, and linkage was rewelded, repaired, installed, or replaced during the November 1986 outage.

My inspection results in the following condition in general. For specific condition of each burner refer to inspection sheet for each burner.

Inner Air Sleeve:

1. Many of the burners have failed welds joining the air sleeve to the outer register front plate.
2. The carbon steel reinforcing bars attaching the air sleeve to register front plate are burned up at the weld between the bar and register plate due to insufficient cooling air.
3. The air sleeve on many burners are barrel shaped and bowed due to insufficient cooling and is more severe on the two middle burners each level which had the air disk throttled. This will not affect operation.
4. Corrective repair for attachment must be made. See attached sketch.

Throat Sleeve:

1. Most of the burners have failed welds attaching throat sleeve to the register plate.
2. The throat sleeve on many burners are barrel shaped. This will not effect the functional operation of the burner.
3. Corrective repair for attachment must be made. See attached sketch.

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Casing:

1. The casing on many of the burners are out of round, have failed welds and are in such condition they will not retain the rope packing. A new design must be developed for these burners.

Register Front and Back Plates:

1. The register plates do not indicate further warping of the plates and are functionally sound. Although they are distorted, resulting in poor alignment of door shafts making linkage adjustment and door adjustment almost impossible. However, registers are still functional.
2. Should it be a requirement to adjust registers on line, A device to regulate the amount of air flow to the burner can be designed to enable outer register air flow adjustment. The air doors will then be set for swirl and no further adjustment to the existing doors.
3. Welds attaching outer register to inner air sleeve will be cut free and register position will be maintained by lugs attached to inner air sleeve. This method of attachment will allow differential expansion between air sleeve and register plate. See attached sketch.

Spin Vanes:

1. The spin vanes, gears, gear shafts, and linkage are all in good condition with the exception of the burner identified on the inspection sheets. The binding of the spin vanes is due to fly ash contamination in the pivot points of the spin vane assembly.
2. Spraying the spin vane gear assemblies with penetrating oil during an outage will free up the assemblies, permitting adjustment of vanes to optimize flame and should not require further adjustment.

Inner Register Front Plate and Disk:

1. The inner register front plate and disk are in good condition and does not require any repair work.

Coal Nozzles:

1. The coal nozzles were all in good condition by visual inspection with the exception of F-4, H-6, and E-2. Which had been destroyed by nozzle fires.
2. Several burner coal nozzles indicate a short term overheat and are identified in the inspection sheets. It is my opinion the overheat is due to insufficient cooling air.
3. For improved protection from overheat, I suggest that future replacement nozzles be fabricated with longer length alloy tips.

Diffuser:

1. With the exception of diffusers that were destroyed by nozzle fires, it is

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Deflector:

1. The deflectors are in very good condition with very little wear evident.

Attached to this report is an inspection sheet for each burner checked to indicate the condition of each component part. A copy of these sheets was left with IPP with items highlighted that must be repaired during the May outage. Also attached are sketches of our recommended modifications listed in this report.

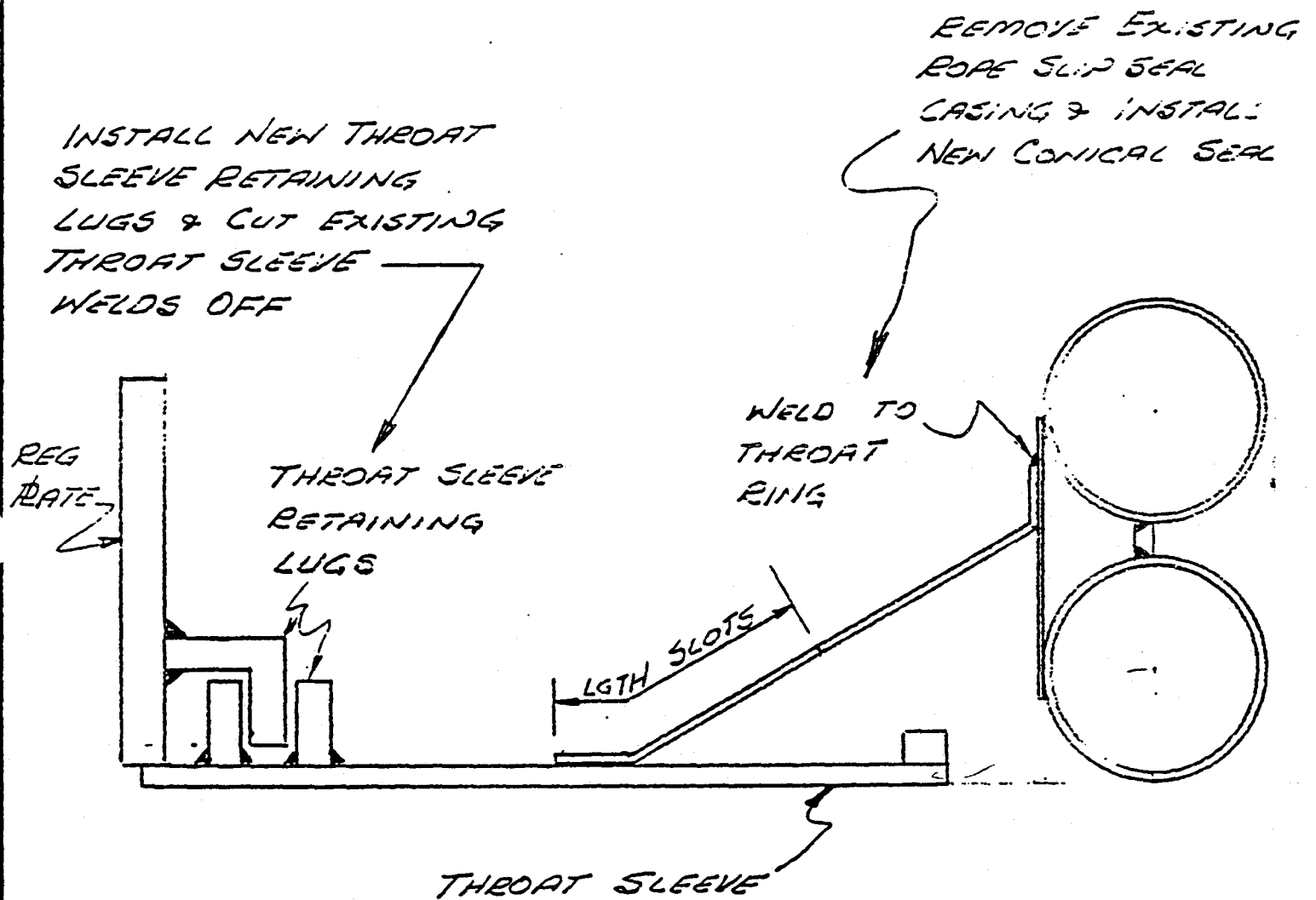
I suggest that these recommended changes be implemented on a selected pulverizer group in the October outage for evaluation for modifications to all of the burners during the Outage in February 1988.


W. E. Newkirk

WEN009/lak

cc: P. L. Cioffi
F. J. McGinley
T. Roberts

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CUSTOMER INTERMOUNTAIN POWER

JOB No. RB-614

SUBJECT THROAT SLEEVE ATTACHMENTS 8

THE BABCOCK & WILCOX COMPANY

INSTALL SLIDING
SLEEVE AROUND REG.

WELD 1" DIA
GUIDE PIPE
TO REG. R.

MAX TRAVEL 10"

CUT ALL WELDS &
STIFFENER BARS
FREE OF REG R

WELD RETAINING
LUGS EACH
SIDE OF
REG R

CONTROL RODS (2)

SET REG DOORS
FOR SWING &
LOCK IN PLACE

SLEEVE SHOWN IN CLOSED POSITION

CUSTOMER INTERMOUNTAIN POWER
SUBJECT AIR REGISTER MODIFICATION

JOB No. RB-614

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